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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,036	02/12/2002	Aleksey Yezerets	4695-00010	7510
26753	7590	05/04/2004	EXAMINER	
ANDRUS, SCEALES, STARKE & SAWALL, LLP 100 EAST WISCONSIN AVENUE, SUITE 1100 MILWAUKEE, WI 53202			TRAN, DIEM T	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,036

Applicant(s)

YEZERETS ET AL.

Examiner

Diem Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

-On page 1, lines 26, the serial number of a copending U.S. Patent Application should be included.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5-16, 19-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Khair et al. (US Patent 6,615,580).

Regarding claims 1, 2, 16, 19, 22, Khair discloses an exhaust emission control method comprising:

passing exhaust through a particulate filter from an upstream side thereof to a downstream side thereof to trap exhaust particulate in said particulate filter;

after passage through said particulate filter (132), passing said exhaust along a catalyst (122) downstream of said particulate filter (see Figure 2);

regenerating said particulate filter by combusting said trapped particulate, and producing a combustion product from said combustion of said trapped particulate; using said combustion product to assist regeneration of said downstream catalyst (see col. 8, lines 52-53).

Regarding claim 5, Khair further discloses that said particulate filter is a diesel particulate filter trapping diesel exhaust particulate, including soot.

Regarding claims 6, 7, Khair further discloses that said downstream catalyst is an NO_x adsorber (411) (see Figure 4).

Regarding claims 8-11, Khair discloses that said NO_x storage element is selected from the group selected consisting of alkali and alkaline earth oxide and said NO_x catalyst is a precious metal catalyst (see col. 8, lines 1-4).

Regarding claims 12, 20, 21, Khair further discloses that said combustion product is CO, providing said downstream NO_x adsorber in sufficiently close proximity to said diesel particulate filter to carry out said thermodynamically favorable reaction with said CO, and regenerating said downstream NO_x adsorber with said CO derived from said diesel particulate filter (see Figure 2, col. 8, lines 52-53).

Regarding claims 13-15, Khair further discloses oxidizing soot in said diesel particulate filter, providing said downstream NO_x adsorber in sufficiently close proximity to said diesel particulate filter to further carry out the reaction according to said $\text{NO} + \text{CO} \rightarrow \frac{1}{2}\text{N}_2 + \text{CO}_2$ (see block 411 in Figure 4).

Regarding claims 23, 24, Khair discloses an exhaust emission control method for a diesel engine exhaust system having a diesel particulate filter trapping diesel

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particulate, including soot, and an NO_x adsorber (411) downstream of said diesel particulate filter (410b) (see Figure 4), said method comprising regenerating said diesel particulate filter by combusting said soot to produce CO, oxidizing said CO to generate heat, and using said heat to regenerate said downstream NO_x adsorber (see col. 8, lines 1-4, 40-53).

Regarding claim 25, Khair discloses said catalyst is a precious metal catalyst (see col. 8, lines 1-4).

Regarding claims 26, 27, 29, Khair discloses an emission control system for diesel engine exhaust comprising a diesel particulate filter passing said exhaust therethrough from an upstream end to a downstream end and trapping diesel exhaust particulate, including soot, at least one of said ends being coated with a catalyst facilitating heat generation and soot combustion to regenerate said diesel particulate filter (see col. 6, lines 7-12).

Regarding claim 28, Khair further discloses that said catalyst is a precious metal catalyst (see col. 2, lines 57-59, col. 6, lines 8-12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khair et al. (US Patent 6,615,580) in view of Penetrante et al. (US Patent 6,038,854).

Regarding claims 3, 17, Khair discloses all the claimed limitations as discussed in claims 2, 16 above, however, fails to disclose passing said exhaust gas through a particulate filter having wall-flow channel and a downstream catalyst having flow-through channel axially aligned with said wall-flow channel of the filter. Penetrante teaches that it is conventional in the art, to pass said exhaust gas axially along an axial flow path comprising a flow channel having a wall-flow channel providing said particulate filter and having a flow-through channel axially aligned with said wall-flow channel in said flow channel and providing said downstream catalyst (see Figure 11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Penetrante in the Khair device since such would have provided sufficient residence time for the catalytic active sites, so as to increase the efficiency of the emission control system.

Claims 4, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khair et al. (US Patent 6,615,580) in view of Penetrante et al. (US Patent 6,038,854) as applied to claims 3, 17 above, and further in view of Maaseidvaag et al. (US Patent 6,167,696).

Regarding claims 4, 18, the modified Khair method discloses all the claimed limitations as discussed in claims 3, 17 above, however, fails to disclose providing said

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downstream catalyst in sufficiently close proximity to said particulate filter by axially overlapping sections of said wall-flow channel and said flow through channel.

Maaseidvaag teaches that it is conventional in the art, to locate said downstream catalyst in sufficiently close proximity to said particulate filter by axially overlapping sections of said wall-flow channel and said flow through channel (see Figure 4, see col. 6, lines 10-20).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Maaseidvaag in the modified Khair method since such would have increased contact surface and sufficient residence time for the catalytic active sites, so as to increase the efficiency of the emission control system.

Conclusion

Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (703) 308-6073. The examiner can normally be reached on Monday -Friday from 8:30 a.m.- 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (703) 308-2623. The fax number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

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DT
April 29, 2004

Diem Tran

Diem Tran
Patent Examiner
Art unit 3748

Thomas Denion
THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700